Chapter Two: Overweight and Obesity and Co-Existing Chronic Diseases

Overweight and obesity are associated with chronic diseases such as diabetes, hypertension, stroke, heart disease, arthritis, asthma, and some cancers. In addition, overweight or obese people are at increased risk for illness and death due to violence and injury.

diabetes

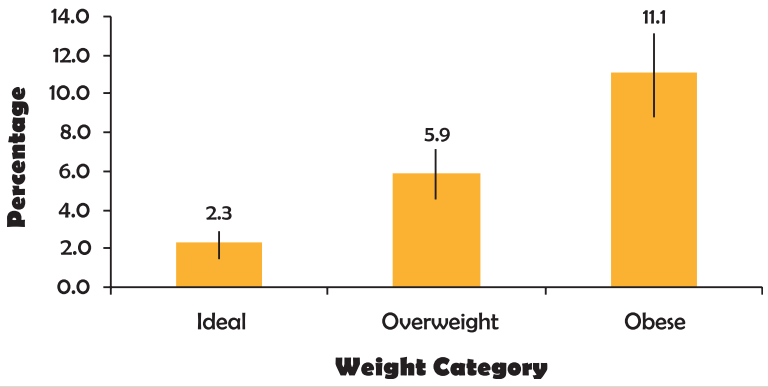
Obesity can lead to type 2 diabetes. Obesity is a major risk factor for developing type 2 diabetes (previously called noninsulin-dependent diabetes mellitus or maturity-onset diabetes). Type 2 diabetes is often considered a lifestyle disease and is associated with overweight and obesity, physical inactivity, and poor dietary habits. The prevalence of diabetes is dramatically higher in obese and overweight people. (See Figure 6.) In fact, nationally 80 percent of people with diabetes are overweight.[22,23]

Diabetes significantly increases the risk for heart disease and stroke, and is the leading cause of new cases of blindness among working age adults. In 2000-2001 about 82,000 nontraumatic lower-limb amputations were performed annually among people with diabetes.[24,25]

The prevalence of diabetes and obesity increased dramatically from 1989-2004, in part due to the increase in obesity during the same time period. (See Figure 7.) Several factors are contributing to the increased prevalence of diabetes: an increase in the precentage of people who are obese, an increase in the number of people being screened, and diagnosis earlier in life. Additionally, the increase in the proportion of racial and ethnic minorities in the population (who are at higher risk for diabetes) leads to a higher overall incidence of diabetes.

Type 2 diabetes, once considered an adult disease, is now also seen in children. It is estimated that almost one-half of all new childhood diabetes cases are classified as type 2.[26] Evidence suggests this increase is a result of the emerging childhood obesity epidemic. Children with diabetes will potentially be affected by the burden of diabetes for a greater proportion of thier lives compared to adults with diabetes. These diabetic children will require expensive, potent, and sometimes complicating medication for most of thier lives. The impacts on their health and on the health care system, will be significant.[26]

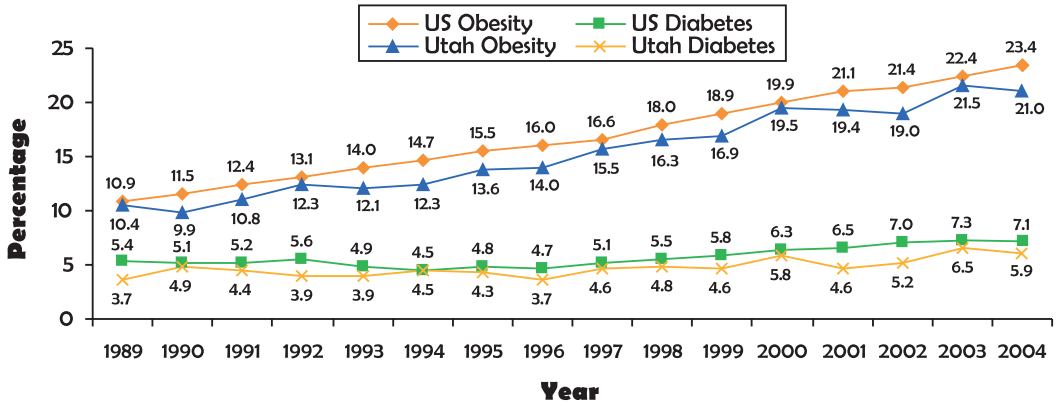
Figure 6. Percentage of Adults With Diabetes by Weight Category, Utah 2004



Source: Utah BRFSS 2004; Age-adjusted to 2000 population.
Overweight is defined as a BMI of 25.0-29.9 and obese is defined as a BMI of ≥ 30.

Figure 7.

Adult Diabetes and Obesity Prevalence Over Time, Utah and US 1989-2004



Source: BRFSS 1989 to 2004; Age-adjusted to the 2000 population.
Obese is defined as a BMI of ≥ 30.

hypertension, stroke, and heart disease

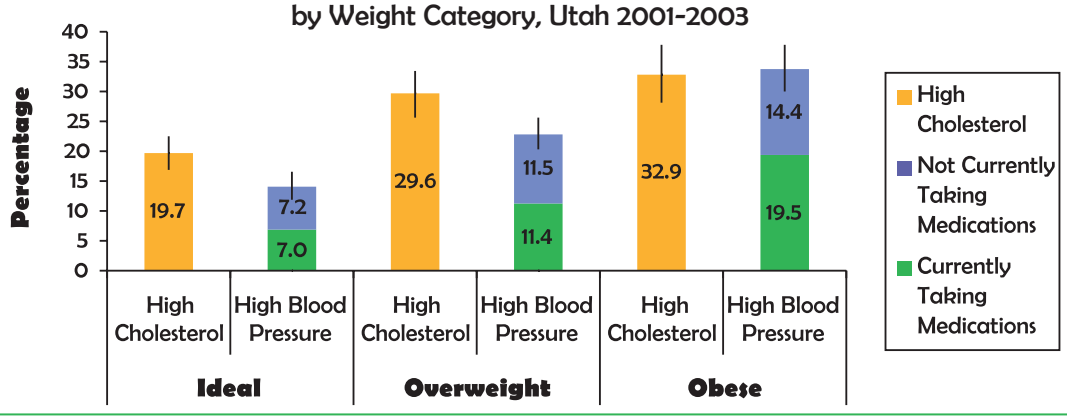
Being overweight or obese increases the risk of high cholesterol, hypertension (high blood pressure), cardiovascular disease, angina, heart attack, and stroke.

The prevalence of high cholesterol is greater in overweight and obese adults than those of ideal weight. (See Figure 8.) The most recent data show that 32.9 percent of Utahns who were obese had high cholesterol levels compared to 19.7 percent of those who were at their ideal weight. This is also true for high blood pressure. In Utah, 33.9 percent of people who were obese had high blood pressure, compared to 14.2 percent of those who were at their ideal weight. Since high cholesterol and high blood pressure are associated with cardiovascular disease, angina, heart attack, and stroke, it is important to maintain both cholesterol levels and blood pressure within normal ranges. Unfortunately, across all weight categories, there appears to be a fairly large number of people with untreated high blood pressure.

Obese people have more angina (heart pain) than those at ideal weight. There may

Figure 8.

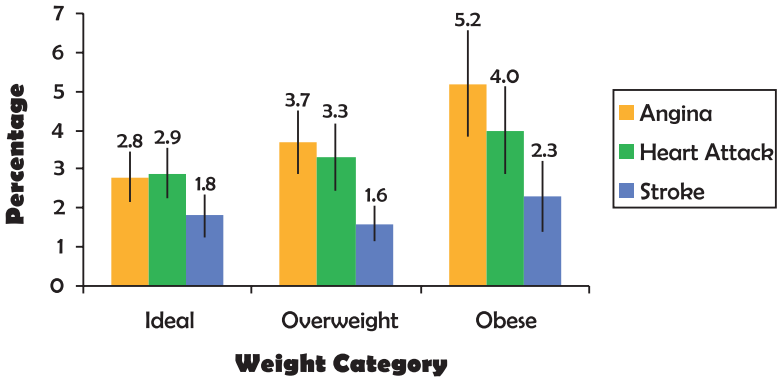
Percentage of Adults with High Cholesterol or High Blood Pressure by Weight Category, Utah 2001-2003



Source: Utah BRFSS 2001 to 2003; Age-adjusted to the 2000 population.
Overweight is defined as a BMI of 25.0-29.9 and obese is defined as a BMI of ≥ 30.

Figure 9.

Percentage of Adults with Angina, Heart Attack, or Stroke by Weight Category, Utah 2001-2003



Source: Utah BRFSS 2001-2003; Age-adjusted to 2000 population.
Overweight is defined as a BMI of 25.0-29.9 and obese is defined as a BMI of ≥ 30.

also be an increased risk of heart attack in obese people compared to those at ideal weight. (See Figure 9.)

Obesity in youth is also related to elevated blood cholesterol levels and high blood pressure which could lead to cardiovascular disease in young adults.[27]

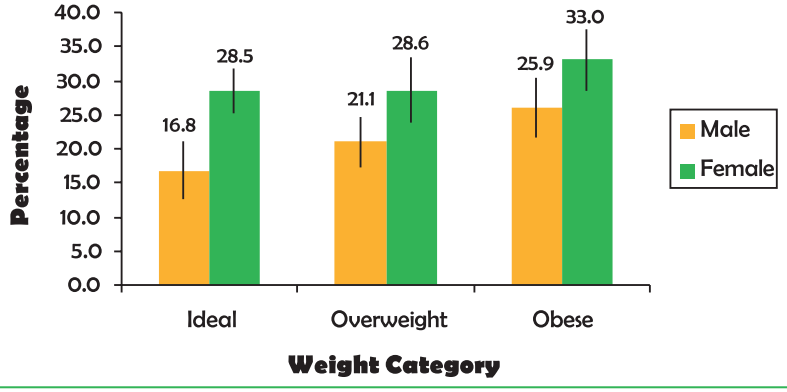
arthritis

Being overweight or obese increases the risk for certain types of arthritis. Osteoarthritis, a slowly evolving degenerative disease, is the most common form of arthritis, and is a major cause of pain and physical disability in older adults.

The relationship between obesity and osteoarthritis may be explained in two ways. First, a person who is overweight or obese has increased force exerted on their joints, which may result in a breakdown of cartilage; and second, an overweight or obese person may have increased bone mineral density, which is a possible risk factor for osteoarthritis.[28] Although this may explain damage to the knee and/or hip joints, it does not explain increased arthritis of the hand observed in overweight or obese persons.

Figure 10.

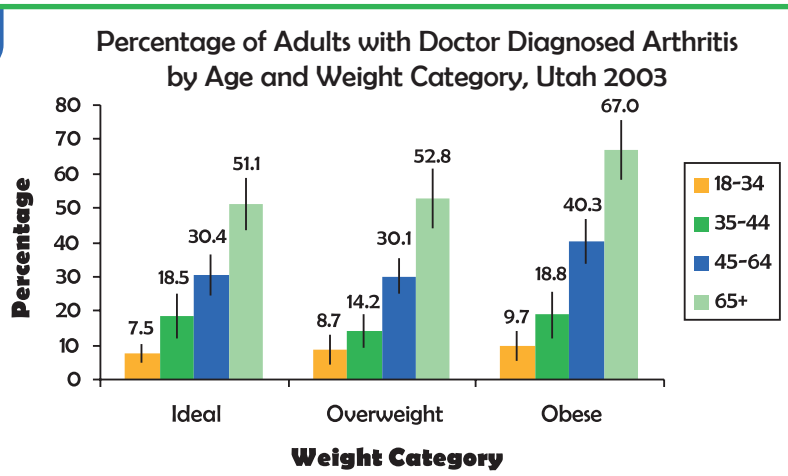
Percentage of Adults With Doctor-Diagnosed Arthritis by Gender and Weight Category, Utah 2002-2003



Source: Utah BRFSS 2002-2003; Age-adjusted to 2000 population.
Overweight is defined as a BMI of 25.0-29.9 and obese is defined as a BMI of ≥ 30.

Utah survey data (BRFSS 2002-2003) suggest that overweight or obese adults may be more likely to have arthritis than adults at ideal weight. (See Figure 10.) Additionally, women are more likely to report arthritis than men across all weight categories.

Figure 11.



Source: Utah BRFSS 2003.
Overweight is defined as a BMI of 25.0-29.9 and obese is defined as a BMI of ≥ 30.

The percentage of adults with arthtitis increases with age for all weight categories. (See Figure 11.) Across all age groups obese adults appear to be more likely to report arthritis than those at ideal weight.

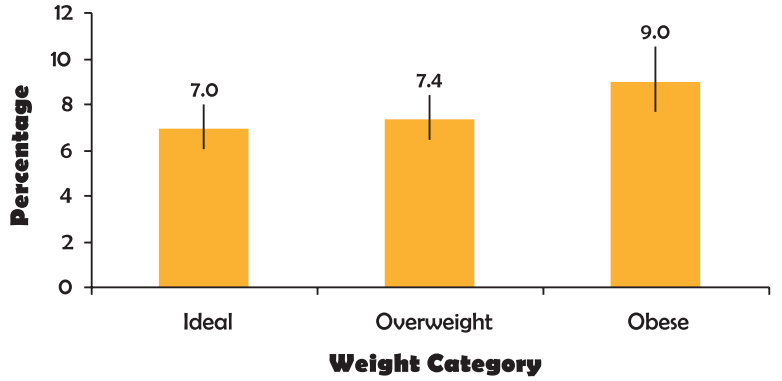
asthma

Asthma leads to reduced physical activity.
Childhood and adult asthma is a growing health problem. Asthma is one of the ten leading chronic conditions that results in physical activity limitation.

In 2004, about nine percent of Utahns were under medical care for asthma, including about eight percent of children.[29] Nationally, 12.5 percent of children <18 years of age have had asthma diagnosed at some time during their lives.[30] About 223,000 Utahns are currently being treated for asthma, and 61,500 of these people are aged 18 or under.[29] A total of 1,577 Utahns were hospitalized with asthma during 2003.[31]

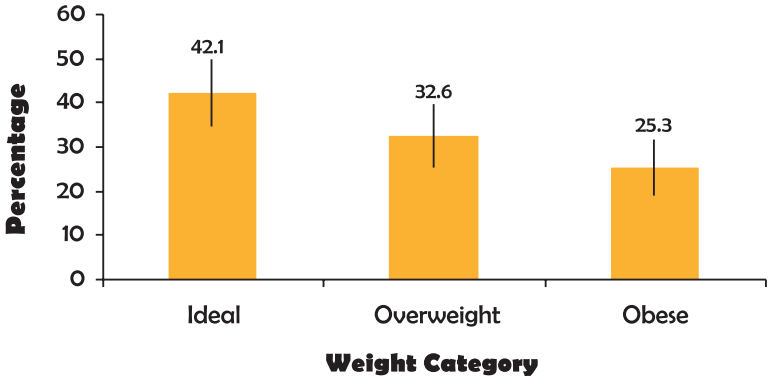
It appears that more obese adults have asthma compared to those at an ideal weight. (See Figure 12.) Although it is unclear whether obesity leads to asthma or asthma leads to obesity, unmanaged asthma may result in a decrease in activity that can lead to weight gain. (See Figure 13.) Additionally, restricted physical activity may lead to asthma since only physical activity allows the lungs to fully expand. Children who are overweight

Figure 12.



Source: Utah BRFSS 2002-2004; Age-adjusted to 2000 population.

Figure 13. Percentage of Adults with Asthma Who Met Physical Activity Guidelines by Weight Category, Utah 2001 and 2003



Source: Utah BRFSS 2001 and 2003; Age-adjusted to 2000 population.
Overweight is defined as a BMI of 25.0-29.9 and obese is defined as a BMI of ≥ 30.

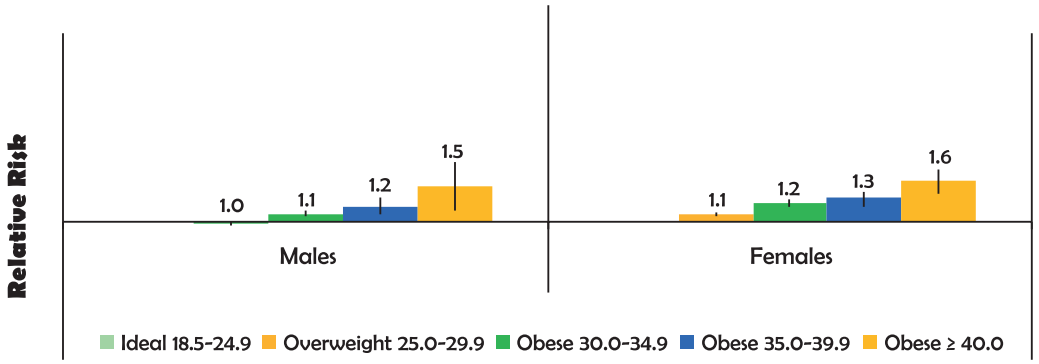
may have a higher prevalence of respiratory symptoms, including asthma. Children with asthma and higher measures of BMI may miss more school and take more prescription medications than children without asthma.

cancer

Obesity is associated with cancers of the colon, breast, endometrium (lining of the uterus), kidney, and esophagus. Since some studies show a decreased risk for cervical, gallbladder, prostate, and thyroid cancer in people with low-fat diets and/or a higher level of physical activity, an obesity link to these diseases is also suspected. Obesity is associated with Hodgkin's disease in men; non-Hodgkin's lymphoma in women; and cancers of the pancreas, bladder, ovary, brain, liver, small intestine, and larynx in both men and women.[32-38]

Overall a 33 percent excess incidence of cancer was seen in obese persons.[33] Studies have also shown that overweight and obesity may also increase the risk of death from cancer.[34, 39-40] (See Figure 14.) One study concluded that the current pattern of obesity accounts for 14 percent of cancer deaths in men and 20 percent of cancer deaths in

Figure 14. Mortality Risk from Any Cancer by Gender and Weight Category, US 1982-1998



Source: Cancer Prevention Study II 1982 to 1998; New England Journal of Medicine April 24, 2003 volume 348, No 17.[40]

women.[40] Unfortunately, only one of four individuals is aware that obesity is a cancer risk.[32]

Obesity may play a significant role in predisposing men and women to certain types of cancer. For example, obese men have a 40 percent higher risk of developing colon cancer than do men at ideal weight.[34] Obese men are also less likely to survive prostate cancer than men who are not obese.[38]

Prior to menopause, obese women have a lower risk of developing breast cancer than do women at ideal weight, but after menopause this tendency reverses. Postmenopausal obese women are 150 percent more likely to develop breast cancer.[35] Obese women are also two to five times more likely to develop endometrial cancer than are non-obese women, particularly if they are postmenopausal.[37] Distribution of body fat, especially in the abdominal area, may increase breast cancer risk for women.[35,36] Finally, obese women's overall risk of cancer may be higher than men's; in a long-term study of almost 30,000 patients, 37 percent of obese women developed cancer compared to 25 percent of obese men.[33]

violence & injury

Obesity can increase the risk of injury. Obese and overweight people may be at higher risk for injury and deaths related to motor vehicle crashes (MVC). Injury can result from the use of emergency medical equipment that is not designed to handle obese people. Additionally, obese people may be more vunerable to weight-based teasing and social isolation, thereby resulting in low self-esteem, depression, and suicide.[41]

Obese people are less likely to wear seatbelts when driving. Motor vehicle crashes are the leading cause of injury deaths in Utah and the second leading cause of injury hospitalizations in the US.[42] BMI is associated with an increased risk of injury or death resulting from MVCs. People who are considerably larger than the 50th percentile in height and weight are at increased risk for more severe injuries and even death resulting from MVCs.[43-48] Obese people were almost twice as likely to die or to be seriously injured in a MVC than those with a BMI less than 20.[47] According to the Royal Automibile Club (RAC) Foundation, overweight persons are more likely to suffer from sleep disorders, such as sleep apnea, which increases the likelihood of falling asleep while driving.[47] Obese persons are also

more difficult for emergency personnel to remove from crashed vehicles, and using medical stretchers designed for people at ideal weights may result in injury for both overweight or obese patients, and emergency responders.[49]

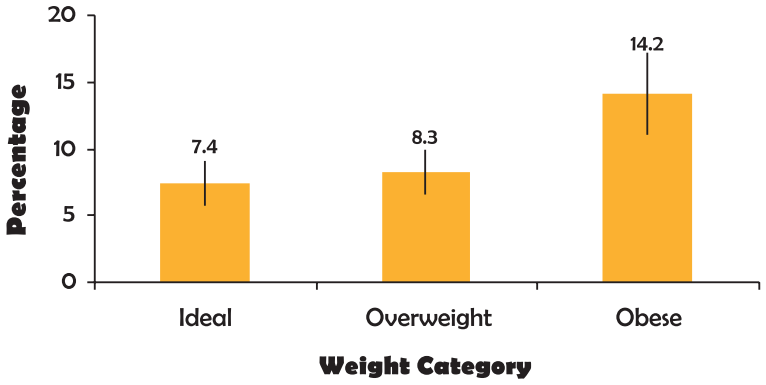
Since motor vehicle manufacturers design vehicle cabins and equipment based on the average male, overweight and obese persons are at increased risk for injury and death resulting from MVCs.

Based on the Utah BRFSS data, obese Utahns use seatbelts less often than non-obese people. (See Figure 15.) They are nearly twice as likely to report "Sometimes, Seldom or Never" when asked about current seat belt usage than are those who are at their ideal weight (14.2 percent compared to 7.4 percent).

Overweight and obese children suffer early and systematic discrimination, resulting in low self-esteem and depression, which continues into adolescence.

Being overweight or obese may contribute to teen suicide. According to the Center for Disease Control and Prevention, suicide is the second leading cause of teen death in Utah.[41] A study of junior high and high school students demonstrated that teasing about body weight was consistently associated with low body satisfaction, low self-esteem, depression, suicidal thoughts, and suicide attempts. Rates of suicidal thoughts and attempts associated with weight-based teasing were two to three times higher among those who were teased by peers and family compared with those who were not teased.[41]

Figure 15. Percentage of Adults Who Wear Seatbelts "Sometimes, Seldom, or Never" by Weight Category, Utah 2002



Source: Utah BRFSS 2002; Age-adjusted to 2000 population.
Overweight is defined as a BMI of 25.0-29.9 and obese is defined as a BMI of ≥ 30.

Futhermore, it is well documented that many obesity-related chronic diseases, such as arthritis, heart disease, and stroke, often result in physical disability and difficulty participating in social activities. This can isolate individuals mentally and emotionally and may contribute to mental health problems.